

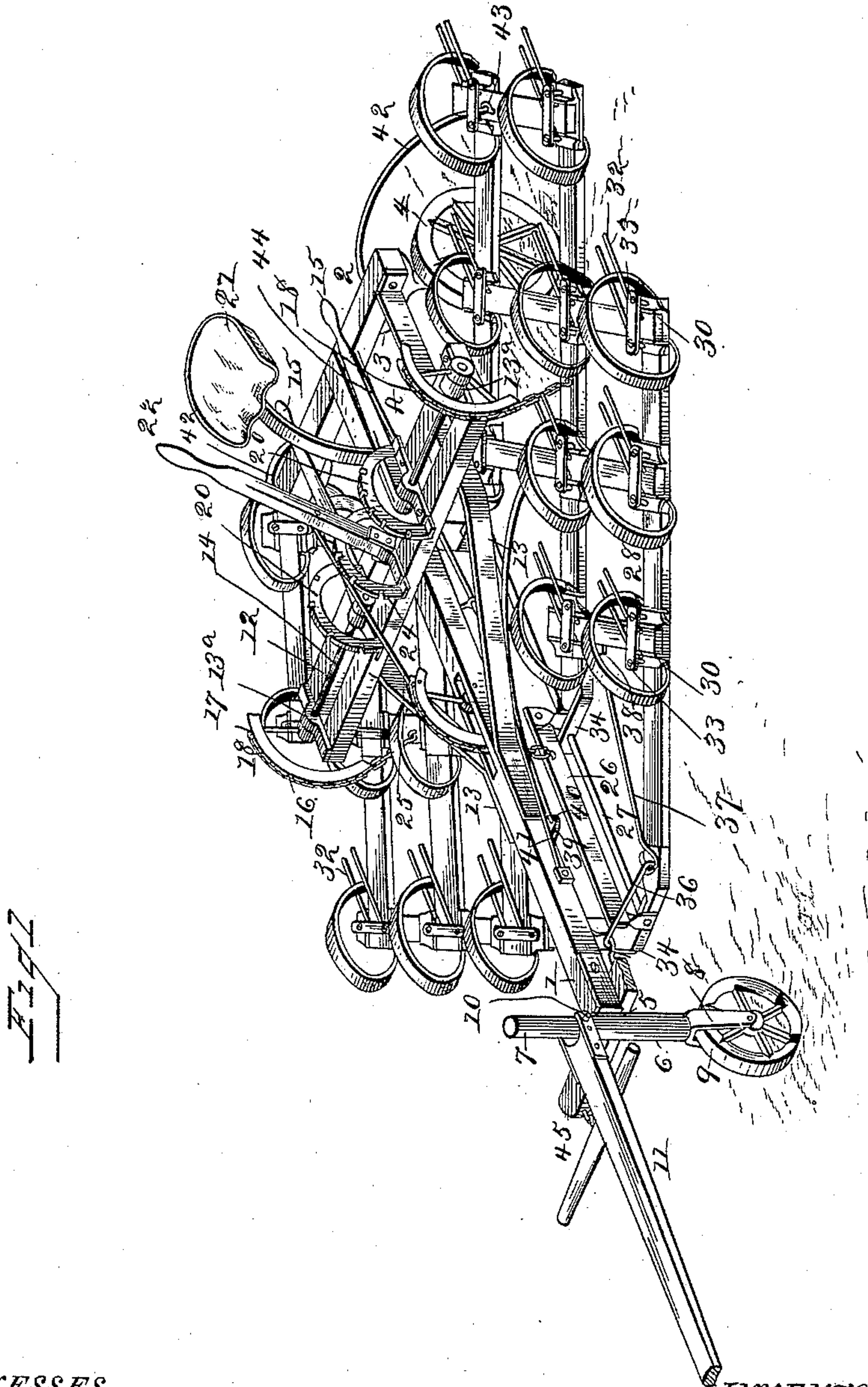
(No Model.)

3 Sheets—Sheet 1.

J. F. & B. A. A. CORRELL.  
HARROW.

No. 405,534.

Patented June 18, 1889.



WITNESSES

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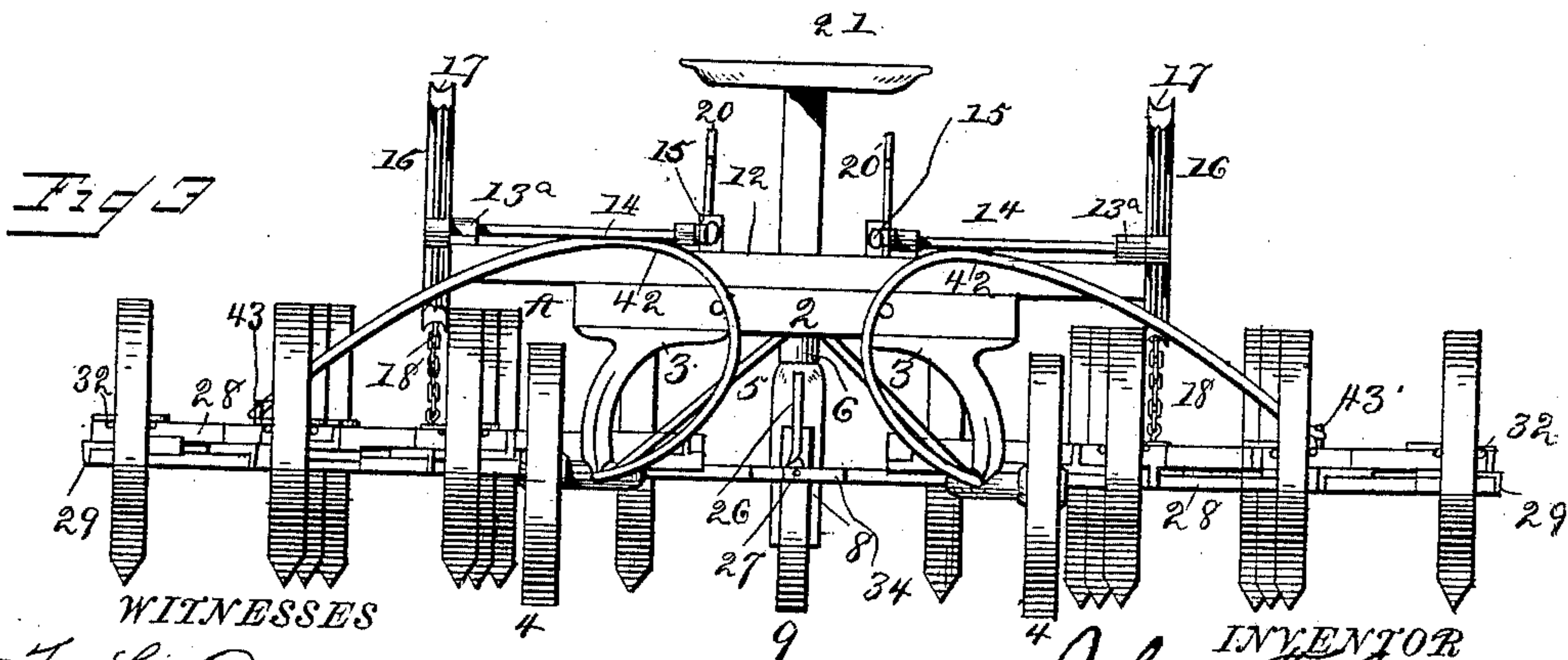
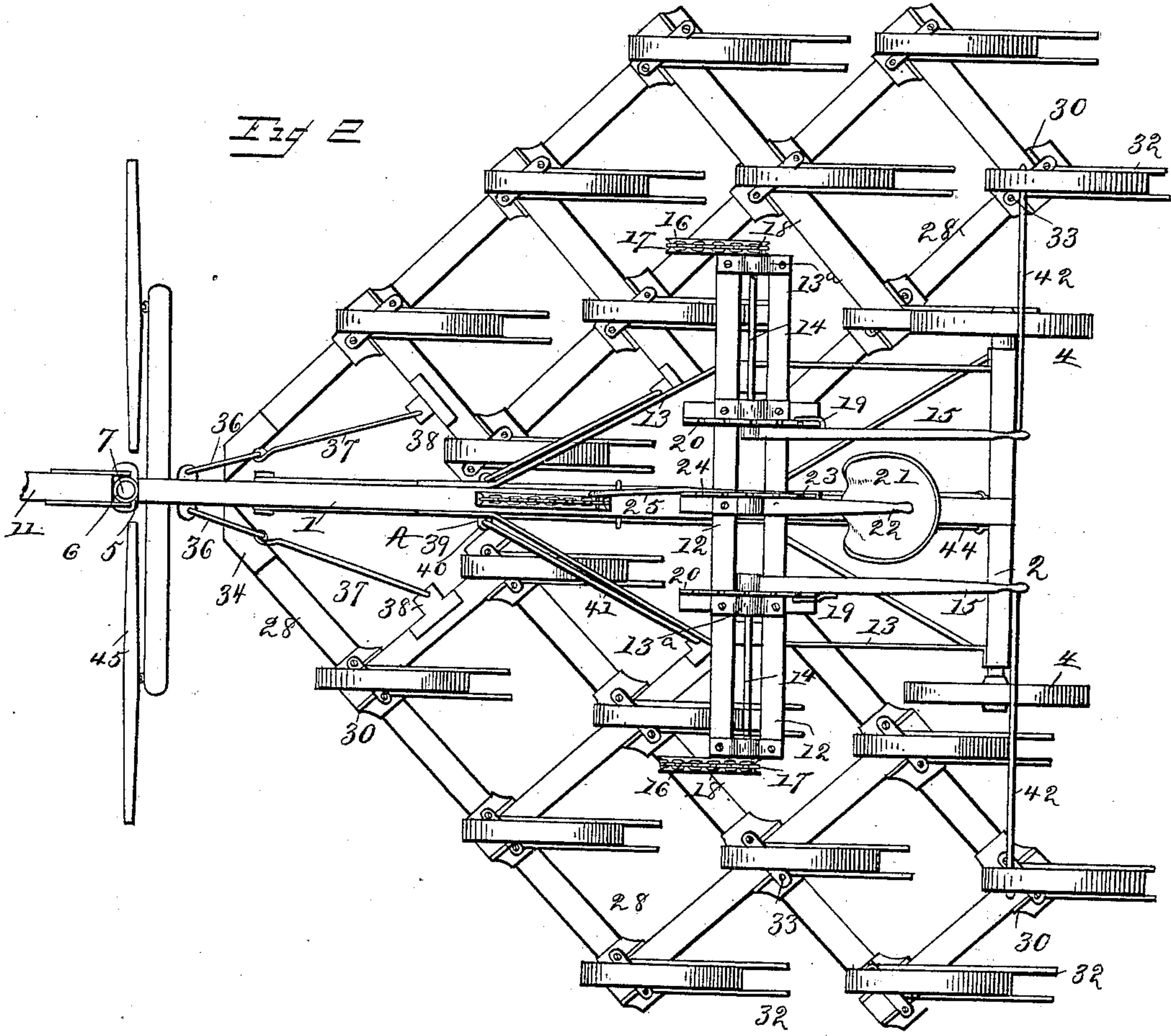
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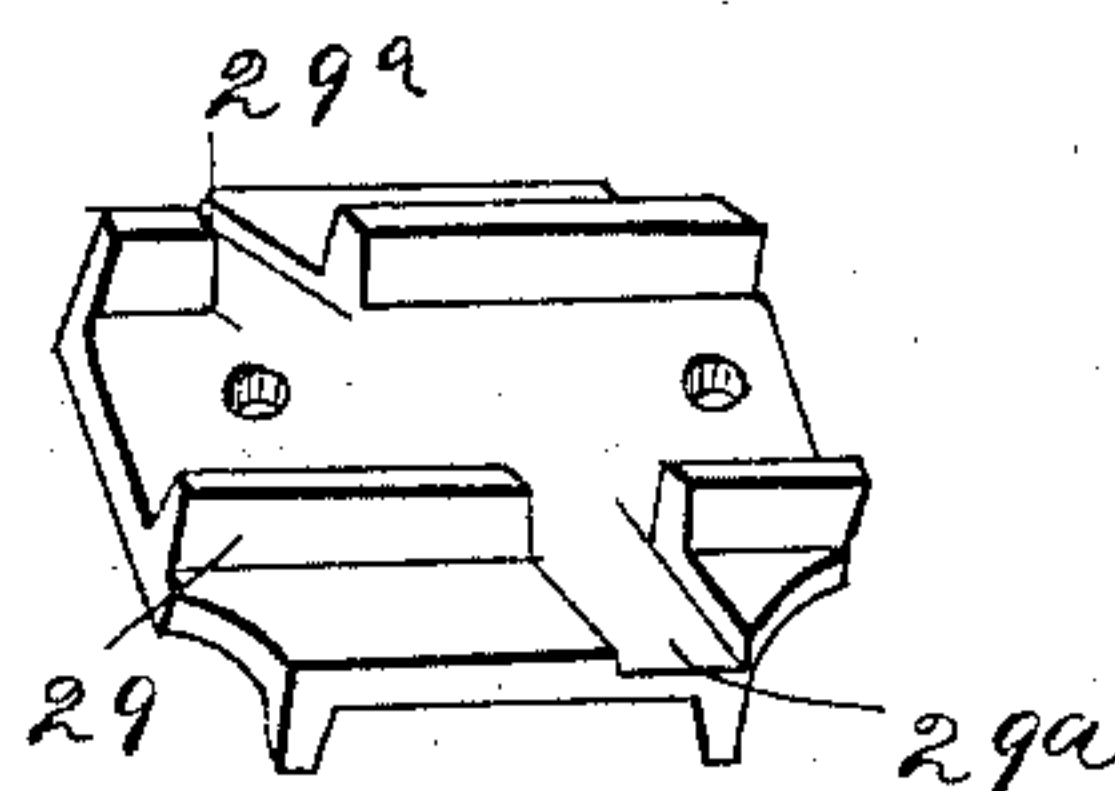
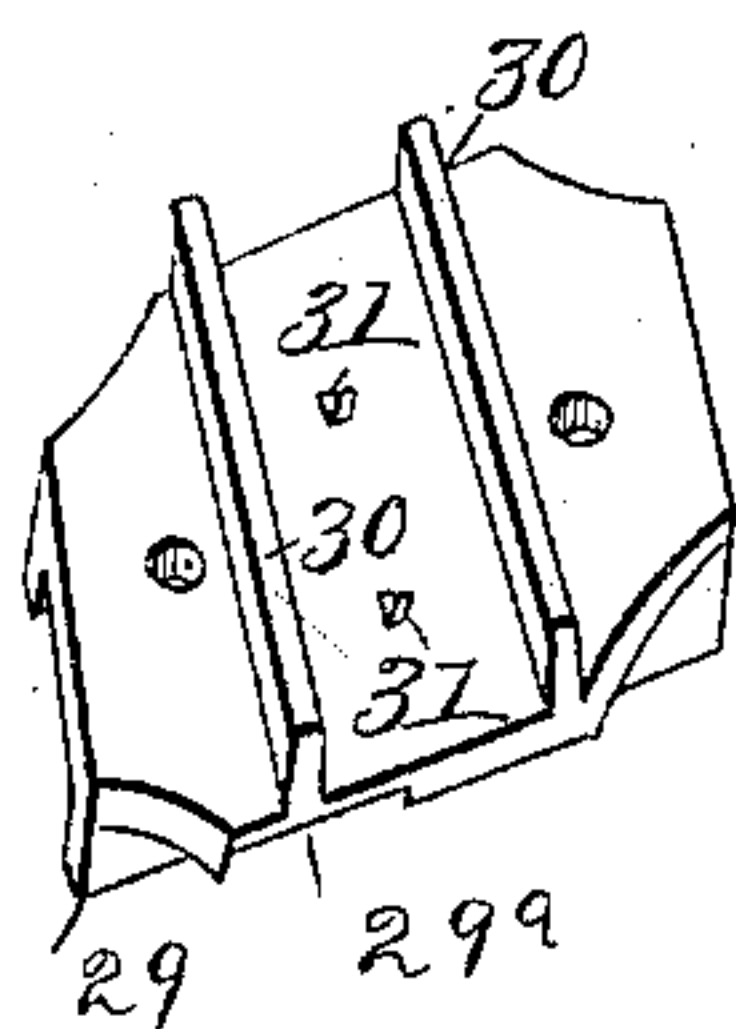
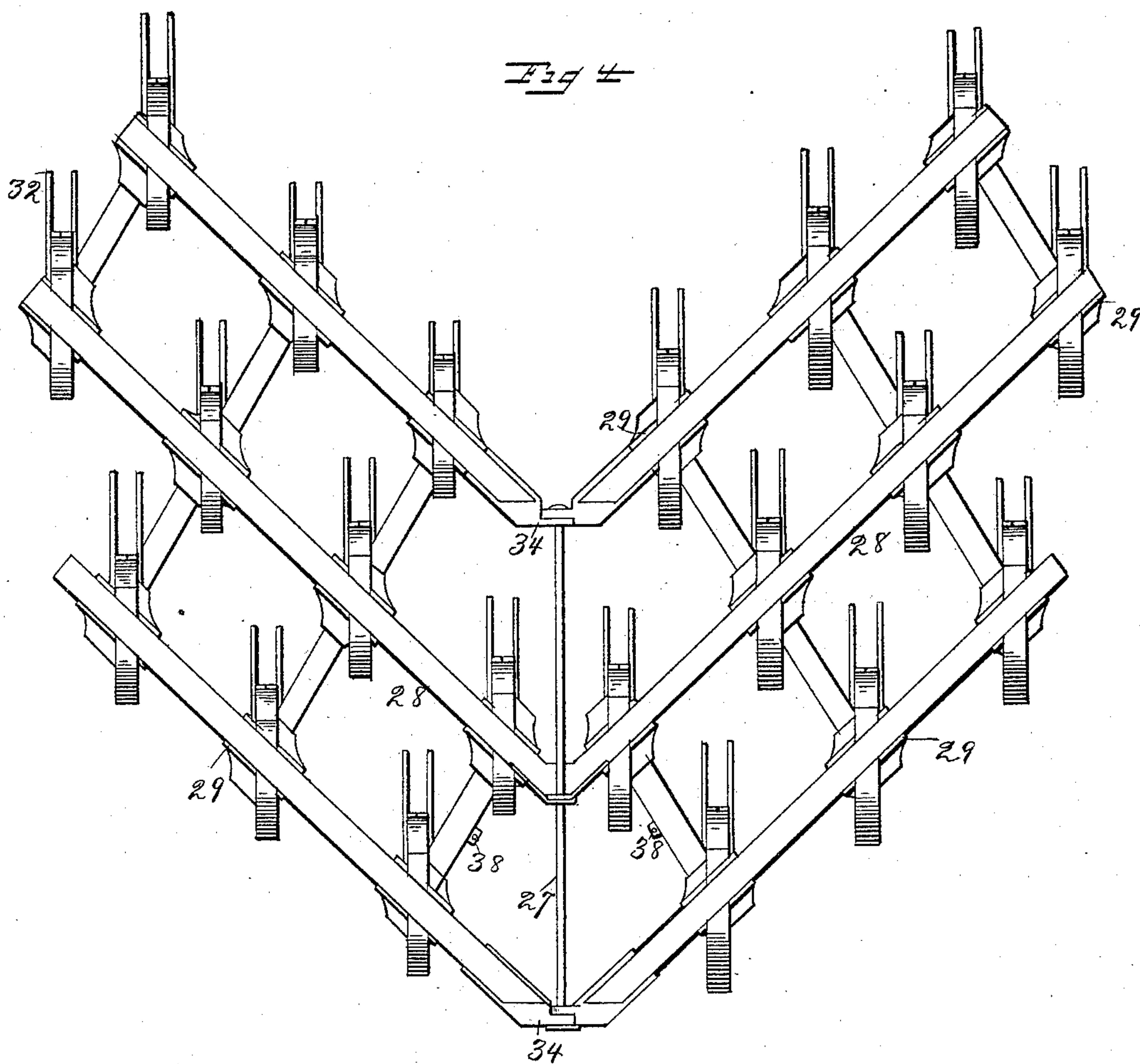
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3 Sheets—Sheet 3.

J. F. & B. A. A. CORRELL.  
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# UNITED STATES PATENT OFFICE.

JOHN F. CORRELL AND BANNER A. A. CORRELL, OF YORK, PENNSYLVANIA.

## HARROW.

SPECIFICATION forming part of Letters Patent No. 405,534, dated June 18, 1889.

Application filed October 8, 1888. Serial No. 287,473. (No model.)

*To all whom it may concern:*

Be it known that we, JOHN F. CORRELL and BANNER A. A. CORRELL, both residents of York, in the county of York and State of Pennsylvania, have invented certain new and useful Improvements in Harrows; and we do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to harrows.

The object is to produce a harrow which shall be of such construction that either of the sides composing the same may be raised when it is desired to transport the device from one point to another, and which may be lowered to any desired depth when in use; furthermore, to produce a harrow which shall be of the highest efficiency and durability in use, and which may be constructed at a comparatively slight expense.

With these objects in view the invention consists in the improved construction and combination of parts of a harrow, as will be hereinafter fully described in the specification, illustrated in the drawings, and pointed out in the claims.

In the accompanying drawings, forming part of this specification, and in which like letters of reference indicate corresponding parts, we have illustrated one form of device embodying the specific features of our invention, although the same may be carried into effect in other ways without departing from the spirit thereof; and in these drawings—

Figure 1 is a perspective view showing the harrow raised and out of contact with the ground. Fig. 2 is a top plan view. Fig. 3 is a rear perspective view. Fig. 4 is a bottom plan view of the harrow with the sulky removed, showing the peculiar manner in which the sides of the harrow are pivoted, so as to admit of their being dropped down, if desired, in the center. Fig. 5 is a detail perspective view, taken from the top of the plate for holding the bars carrying the spring-fingers in position; and Fig. 6 is a perspective view taken from the bottom of the same.

Referring to the drawings, A designates the frame of the machine, constructed of a longitudinal brace 1, provided at one end with a cross-piece 2, to which are secured two depend-

ing arms 3, carrying the rear wheels 4, and at its front end is secured a yoke 5, provided with a collar 6, in which moves an arm 7, bifurcated at its lower end to form a recess 8, in which the front or guide wheel 9 of the device moves. The upper end of this arm is provided with two lateral arms 10, on which is hinged the tongue 11, carrying at its outer end the neck-yoke, to which the horses are secured, so as to guide the machine when in use.

At a point on the brace and near the cross-piece 2 are secured two lateral-extending cross-pieces 12, which rest upon braces 13, the rear ends of which are secured to the cross-piece 2 at the end of the brace-piece 1, and their upper ends being secured to the brace 1 at a point near its front end. Upon this cross-piece 12, and mounted upon suitable boxes 13<sup>a</sup>, secured thereon, are two shafts 14, carrying on their inner end a lever 15 and on their outer end a sector 16, provided on its periphery with a groove 17, in which works a chain 18, which passes down and is secured by suitable means to the frame of the harrow, each of the levers connected with the shafts being provided with a spring-pawl 19, adapted to engage a semicircular rack-plate 20, secured to the cross-pieces 12, so that the levers may be raised to any desired height and kept in place at that point. Between these two levers and immediately in front of the seat 21 is secured a similar lever 22, provided with a pawl 23, engaging rack-plate 24, of the same construction as those on each side of it. To this lever is connected a rod 25, which extends forward and engages an opening formed in a sector carrying a chain which engages suitable openings formed in a flat metallic bar 26, pivoted on a rod 27, to which the inner ends of both of the harrow-frames are pivoted.

The harrow-frames above referred to are constructed of a number of diagonally-arranged rails 28, of wood or other suitable material, the same being held firmly together by means of a plate which rests upon the said rails, so that they will be prevented from shifting from one side to the other when the harrow is being used. This plate is provided on its under surface with two downward-extending arms 29, which serve to hold the rails securely in place, and a diagonal groove 29<sup>a</sup> serves to hold the spring-teeth of the har-



row in place. The upper surface is provided with two upward-extending flanges 30, between which the rails fit and are prevented from working loose therein by means of two  
5 lugs 31, which may be cast integral with the plate or secured in any suitable manner.

When the rails are to be secured in place, the plate is placed upon the lower rail and the spring-teeth forced through the diagonal  
10 groove before referred to. The top rail is then placed in position and rests in between the two flanges and approximately level with the same. The clearers 32 are then placed in position and a plate placed over them, through  
15 which extend two screws or bolts 33, which pass through two openings in the plate and into the rail, thereby serving to clamp the rails, the clearers, and spring-teeth securely in place at their point of juncture.

20 The inner ends of each of the longer rails are provided with a plate 34, having openings formed therein, through which extends a rod 35. This rod serves as a pivot on which they move and also to hold them in an approxi-  
25 mately parallel plane. In order to prevent the harrow being forced out of position with relation to the sulky when the device is being used, a plate is secured to the underside of the brace, and to this is secured two arms  
30 36, which connect with two other arms 37, secured to similar plates 38 upon the harrow-frame, thus supporting the front end and preventing it from being drawn out of position. Immediately back of the plate just re-  
35 ferred to is another plate 39, provided on each side with openings 40, in which are braces 41, which are connected with the frame of the harrow, and also serve the same purpose as the ones just referred to.

40 The rear end is sustained by means of two curved springs 42, the lower ends of which are secured to the axles of the wheels and the upper outer end engaging a hook 43, secured to the harrow-frame. The frame is also ad-  
45 ditionally braced by means of rods 44, secured to the front end of the brace, and which extend back and are secured to the cross-piece, and by rods secured to the ends of the axle and also to the brace. Immediately back of  
50 the guide-wheel, and pivoted in a suitable manner to the brace, are secured the double-trees 45, by means of which the device is drawn over the ground.

Having now described the different parts  
55 of our device, we will proceed to show its method of operation.

When the device is to be taken to the field the levers are forced down, thereby lifting the harrows out of contact with the ground  
60 at the sides, and the center lever is pulled back, thus lifting the center part of the harrow. When in this condition it may be transported to any distance or over any kind of ground without any injury to the spring-teeth.

65 When the field has been reached and operations are begun, the levers are lifted up and the harrow-frame allowed to drop as far as

may be desired. Now, should the ground be stony, it will be seen readily that the depth of the spring-fingers may be regulated at will, 70 thereby preventing any violent jar or racking of the machine by causing the fingers to sink too deeply into the ground, or by coming in contact with the inequalities of the same, and should a piece of ground be reached 75 in which it is impracticable to use the device, all the harrows in an instant may be elevated out of contact with the ground. It will thus be seen that although this peculiar construction of a harrow is simple it will be found highly 80 efficient and durable in use, and may be constructed at a cost not in excess of those now on the market.

We are conversant with the fact that a harrow of this class has been provided in which 85 it has been composed of two hinged sections, each having a guide-rod on its outer edge. Upon the wheeled frame are journaled three independent shafts having levers and eccen-  
90 trics, and the eccentrics of the center-shaft are connected by chains to the inner ends of the harrow-sections, while those of the outer shafts are connected to the outer edges thereof, whereby the driver may elevate the outer edge of each section, the inner edges of both, 95 or may raise both sections simultaneously. We are also aware that a curved harrow-tooth has been used in connection with a U-shaped frame-grip, or seat having a frame-grip, and also upwardly-extending arms or spring-sup- 100 ports, a cross-tie and one or more bolts adapted for arrangement together about the frame-bars at their intersection to receive and clamp the upper end of the spring-tooth, and we do not, broadly, lay claim herein to either of 105 said constructions.

Having thus fully described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. The combination, with the rails, of a 110 plate for holding the same intact, the under side of which is provided with two downward-extending shoulders designed to fit around the rail, and a diagonal slot in which the spring-finger fits, substantially as described. 115

2. The combination, with the plate, the under side of which is provided with two downward-extending flanges designed to fit around the rails, and having a diagonal slot cut therein in which the spring-finger of the rail 120 fits, of two flanges formed on its upper side and having two lugs formed between the flanges which are designed to engage the rails of the harrow to prevent the same from working loose, substantially as described. 125

In testimony that we claim the foregoing as our own we have hereunto affixed our signatures in presence of two witnesses.

JOHN F. CORRELL.

BANNER A. A. CORRELL.

Witnesses:

W. GRANT HANTZ,

ALEXANDER M. BRODBECK.